

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

HEERTJES *et al.*

Appl. No.: 10/822,139

Filed: April 12, 2004

For: **Vibration Isolation System**

Confirmation No.: 1174

Art Unit: 3632

Examiner: Wood, Kimberly T.

Atty. Docket: 1857.5410000

Arguments to Accompany the Pre-Appeal Brief Request for Review

Mail Stop AF

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby submit the following Arguments, in five (5) or less total pages, as attachment to the Pre-Appeal Brief Request for Review (Form PTO/SB/33). A Notice of Appeal is concurrently filed.

Arguments

Applicants' arguments in the Reply under 37 C.F.R. § 1.116 filed March 23, 2009, in response to the final Office Action issued January 23, 2009, were not properly considered or responded to by the Examiner in the Advisory Action issued April 7, 2009.

Rejections under 35 U.S.C. § 102

Claims 1-5 were rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Japanese Patent Application No. JP 10-112,433 to Tatsuya ("Tatsuya"). Claims 1-5 were also, independently, rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Japanese Patent Application No. JP 10-275,756 to Masato ("Masato"). Applicants respectfully traverse these rejections.

The Final Office Action and Advisory Action Failed to Properly Interpret the Claims

Claim 1 recites, *inter alia*:

a control system ... is configured to:
decouple vibrations in **modal** directions;
determine a **modal** compensation signal for each **modal**
direction;
recouple each **modal** compensation signal into an active
isolator control signal for each active isolator device...[.]
(emphasis added)

Neither Tatsuya nor Masato disclose at least the distinguishing “modal” features of claim 1 because the Examiner has improperly follow claimed interpretation law.

It is well established law that an Examiner must determine the scope of the claims in patent applications “not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction ‘in light of the specification as it would be interpreted by one of ordinary skill in the art.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (quoting *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004)). Further, the Examiner is reminded “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970). Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999).

Applicants submit that the meaning of “modal” recited in claim 1 should be interpreted as taught in the instant specification, for example (emphasis added):

Modal decoupling is **a coordinate transformation**, usually from a Cartesian coordinate system, to a modal coordinate system. The **modal coordinate system comprises** coordinate **axes** that are **orientated in the directions of the natural vibrations of the body concerned**. The modal coordinate system is **unique for each body** and the **way the body is coupled to the outside**.

[See paragraph 0044].

Further, Applicants' specification teaches, by way of incorporation, the mathematics to accomplish the transformation from one coordinate system to a modal coordinate system (emphasis added):

Modelling [sic] of the mechanical system, *determining* the corresponding *equations* of motion and *modal decoupling* are described in Subrahmanyam et al., Active Vibration Isolation Design for a Photolithographic Stepper, In Proc. 6th International Symposium on Magnetic Bearings, pp. 10-21, 1998, which is incorporated herein by reference.

[See paragraph 0055].

The Subrahmanyam document, incorporated by reference into Applicants' specification teaches the equations necessary to move between what are referred to as coordinate frames. The sensors, actuators, and body exist on coordinate frames (usually described by Cartesian coordinate system). However, the vibrations of the body, that depend on many variables of the body (*e.g.*, size, shape, density, center of gravity, etc...), exist on their own coordinate frame (and the vibration coordinate frame cannot be easily described or manipulated with a Cartesian coordinate system). The equations of Subrahmanyam facilitate describing the vibrations of the body in a unique vibration "modal" coordinate system, where counteracting forces in the same coordinate system can be applied to correct for the vibrations. The vibration "modal" coordinate system is unique in that it is different for each body (based on that body's natural vibration modes and the body's connection to the outside). In order to correct for the vibrations of the body, control of actuators in another coordinate system (most likely Cartesian) is need. Thus a transformation from the vibration "modal" coordinate system back to a base coordinate system (typically Cartesian) occurs, such that the actuators can be easily controlled.

Additionally, Applicants' specification teaches, for example (emphasis added):

Modal decoupling is ***a transformation*** to a ***coordinate system*** having ***axes*** in the ***directions of*** the ***natural modes or eigenmodes*** of the ***corresponding body***. Thus, ***vibrations of the body*** may be ***represented*** in the modal coordinate system ***by independent vibrations in the modal directions***.

[See paragraph 51].

It is these passages of Applicants' specification, along with the disclosure incorporated by reference, that would give one of ordinary skill in the art notice of the change in meaning of "modal," from any ordinary and customary meaning. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

However, in contrast to the meaning for "modal" as recited in claim 1, and discussed in at least paragraphs 0044, 0051, and 0055 of the instant specification, the Final Office Action improperly interpreted the word "modes" disclosed in Tatsuya and calculation of dislocation of the main body part and conversion to dislocation of the reticle stage disclosed in Masato as teaching "modal," as recited in claim 1. The operational "modes" and control "modes" disclosed by Tatsuya do not involve transformations of the Cartesian vibrations measurements to any form of the claimed "modal" coordinate system, recited in claim 1, and discussed in at least paragraphs 0044, 0051, and 0055 of the instant specification. Likewise, the calculated dislocation of the main body and re-associated reticle dislocation disclosed by Masato do not involve transformations of the Cartesian vibrations measurements to any form of the claimed "modal" coordinate system, recited in claim 1, and discussed in at least paragraphs 0044, 0051, and 0055 of the instant specification.

Accordingly, Applicants submit that neither Tatsuya nor Masato disclose a "control system [that] is configured to: decouple vibrations in ***modal*** directions; determine a ***modal*** compensation signal for each ***modal*** direction; recouple each ***modal*** compensation signal into an active isolator control signal for each active isolator device; and stabilize at least one unstable natural mode of the body," as recited in Applicants' claim 1.

Therefore, for at least the reasons set forth above, Applicants submit that independent claim 1 is patentable over Tatsuya and Masato.

Claims 2-5, all of which depend from independent claim 1, are also patentable over Tatsuya and Masato for reasons similar to those set forth above with respect to independent claim 1, and further in view of their own respective features.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1-5, and find the claims allowable over the applied reference.

Conclusion

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 102(b) of claims 1-5 over Tatsuya or Masato. The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

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Date: July 22, 2009

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